

REMARKS / ARGUMENTS

In response to the Office Action dated January 7, 2008, Applicants respectfully request reconsideration based upon the above amendments and following remarks and the accompanying RCE. Applicants respectfully submit that the claims as presented are in condition for allowance.

Status of Claims

Claims 1-10 are currently pending in this application. Claims 1-10 stand rejected in this application. Applicants have amended claims 1 and 6, leaving claims 1-10 for consideration upon entry of the present Amendment.

Rejections Under 35 U.S.C. §102 (b)

Claims 6 and 8 were rejected under 35 U.S.C. 103(a) as being unpatentable over Chung et al. (DE 100 50 936 A1).

Applicants traverse this rejection for the following reasons. Applicants respectfully submit that the obviousness rejections based on the above-cited references is improper as the references fail to teach or suggest each and every element of the instant invention in such a manner as to perform as the claimed invention performs. For an obviousness rejection to be proper, the Examiner must meet the burden of establishing a prima facie case of obviousness. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988). The Examiner must meet the burden of establishing that all elements of the invention are taught or suggested in the prior art. MPEP §2143.03.

The Examiner acknowledges that Chung is deficient in anticipating the claimed invention. More specifically, the Examiner indicates that Chung differs from the claimed invention in that Chung does not specifically disclose that the control unit performs a test in response to an error event to determine whether or not the error event is caused by a

reflection. However, the Examiner indicated that claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function alone (MPEP 2114). The Examiner argued that Chung discloses a line breakage, the control unit of Chung is capable of detecting a reflection from a line breakage, and thus it would have been obvious for one of ordinary skill in the art to configure the control unit to perform a test in response to an error event to determine whether or not the error is caused by a reflection.

Applicants have amended Claim 6 to now recite, inter alia, "a control unit for detecting a fiber breakage status based on control program data stored in an internal memory of the CPU for disabling the master channel while enabling the slave channel to determine, in response to an error event occurring, whether or not the error event is caused by a reflection and, in response to determining that the error event is caused by the reflection, activating a selected one of the master and slave transmitting/receiving units to utilize a redundant channel such that optical transmission occurs not through the master channel but through the slave channel". No new matter has been added by these amendments as antecedent support may be found in the specification as originally filed, such as at page 15, lines 1-4; page 16, lines 11-19; and page 19, line 3 to page 21, line 12.

Chung discloses a bidirectional, self-healing optical ring network with multiplexed subcarriers. In the event of an optical fiber breakage, light source failure, or photodetector breakdown, the operability of the optical ring network can be restored. Unless a central base station and an optical network unit (ONU) have received an anticipated signal within a predetermined time period, a line breakage is assumed to have occurred. A fault recovery transmitter/receiver is then used to send an optical signal clockwise or counter-clockwise. However, it should be noted that failure to receive the anticipated signal is not necessarily the result of a broken cable and could, in fact, be the result of a system error or an equipment failure not involving a broken cable. In addition, Chung discloses that the central base

station and the ONUs are only connected through a single optical fiber (refer to Chung's Summary of the Invention for further details).

Chung fails to disclose Applicants' claimed structure comprising a control unit for detecting a fiber breakage status based on control program data stored in an internal memory of the CPU. Additionally, Chung neither discloses nor suggests Applicants' claimed structure in the form of an internal memory of a CPU that includes such control program data. More specifically, the claimed control program data disables the master channel while enabling the slave channel to determine, in response to an error event occurring, whether or not the error event is caused by a reflection and, in response to determining that the error event is caused by the reflection, activating a selected one of the master and slave transmitting/receiving units to utilize a redundant channel such that optical transmission occurs not through the master channel but through the slave channel.

Moreover, Chung fails to disclose or suggest structure in the form of a memory that stores a control program for disabling the master channel while enabling the slave channel to determine, in response to an error event occurring, whether or not the error event is caused by a reflection. Furthermore, Chung fails to disclose or suggest a memory that stores a control program for disabling the master channel while enabling the slave channel to determine, in response to an error event occurring, whether or not the error event is caused by a reflection and, in response to determining that the error event is caused by the reflection, activating a selected one of the master and slave transmitting/receiving units to utilize a redundant channel such that optical transmission occurs not through the master channel but through the slave channel. Thus, Applicants' claimed switching media converter is completely distinguishable from the systems disclosed in Chung.

Applicants' claimed invention differs dramatically from Chung's approach of assuming that a line breakage has occurred if a signal has not been received within a

predetermined time window. Chung fails to perform a check to ascertain whether or not an error event is caused by a reflection. As indicated previously, failure to receive the anticipated signal is not necessarily the result of a broken cable and could, in fact, be the result of a system error or an equipment failure not involving a broken cable. Moreover, Chung discloses that the central base station and the ONUs are only connected through a single optical fiber. Accordingly, Chung fails to disclose Applicants' claimed utilization of a redundant channel in response to detection of reflection such that optical transmission occurs not through the master channel but through the slave channel.

An illustrative example will serve to distinguish Applicants' claimed invention from the approach disclosed in Chung. Assume that an optical fiber is broken such that it has a vertical surface at its broken end. Reflection occurs at this vertical surface so that an optical signal transmitted from a transmitter through the optical fiber will be returned to the transmitter. Adopting the approach disclosed in Chung, breakage of the optical fiber is not recognized by detecting a reflection from the fiber, but instead is inferred based upon not receiving an expected signal. Any of various problems could cause lack of receipt of the expected signal, including problems that do not involve reflections attributable to a broken optical fiber. In response to not receiving this expected signal, Chung uses a fault recovery transmitter to send an optical signal either clockwise or counter-clockwise. On the other hand, using Applicants' claimed switching media converter, it is possible to check that the error is caused by reflection and, in response thereto, transmit the signal over an extra or redundant path. Chung fails to disclose or suggest Applicants' claimed redundant path.

In view of the foregoing considerations, it is submitted that claim 6 is patentable over Chung. It is further submitted that claim 6 is allowable over the cited prior art. Dependent claims inherit all of the limitations of the respective parent claim. Since claim 8 depends

from claim 6, claim 8 is allowable for the reasons discussed above in connection with claim 6.

Accordingly, Applicants respectfully submit that the Examiner's rejection under 35 U.S.C. §103(a) has been traversed, and request that the Examiner reconsider and withdraw this rejection.

Rejections Under 35 U.S.C. §103(a) - Claims 1-5 and 9

Claims 1-5 and 9 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Chung et al. (DE 100 50 936 A1) in view of Van Deventer (US Patent US 5,886,801)

Applicants traverse this rejection for the following reasons. Applicants respectfully submit that the obviousness rejections based on the above-cited references is improper as the references fail to teach or suggest each and every element of the instant invention in such a manner as to perform as the claimed invention performs. For an obviousness rejection to be proper, the Examiner must meet the burden of establishing a prima facie case of obviousness. *In re Fine*, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988). The Examiner must meet the burden of establishing that all elements of the invention are taught or suggested in the prior art. MPEP §2143.03.

The Examiner acknowledges that Chung is deficient in anticipating the claimed invention, and looks to Van Deventer to cure these deficiencies. More specifically, the Examiner indicates that Chung differs from the claimed invention in that Chung does not specifically disclose that the control unit performs a test in response to an error event to determine whether or not the error event is caused by a reflection. However, the Examiner indicated that claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function alone (MPEP 2114). The Examiner argued that Chung discloses a line breakage, the control unit of Chung is capable of detecting a reflection

from a line breakage, and thus it would have been obvious for one of ordinary skill in the art to configure the control unit to perform a test in response to an error event to determine whether or not the error is caused by a reflection.

The Examiner indicates that Chung further differs from the claimed invention in that Chung does not specifically disclose a coupler for transmitting the multiplexed signal outputted from the WDM MUX/DEMUX through two different optical communication lines in a distributed manner, while transmitting an optical signal received from any one of the optical communication lines to the WDM MUX/DEMUX. However, the Examiner alleges that Van Deventer discloses a coupler for transmitting signals through two different optical communication lines in a distributed manner.

Even if Chung and Van Deventer are somehow combined, the resulting combination does not meet Applicants' claimed invention. Claim 1 has been amended to recite, *inter alia*, "wherein the redundancy MCs each include a central processing unit (CPU), and first and second couplers respectively connected to a master channel and a slave channel of the redundancy MCs; the CPU detecting a fiber breakage status based on control program data stored in an internal memory of the CPU for disabling the master channel while enabling the slave channel to determine, in response to an error event occurring, whether or not the error event is caused by a reflection and, when the error event is caused by a reflection, a redundancy MC of the redundancy MC's initiates a utilization of a redundant channel such that optical transmission occurs not through the master channel but through the slave channel". No new matter has been added by these amendments as antecedent support may be found in the specification as originally filed, such as at page 15, lines 1-4; page 16, lines 11-19; and page 19, line 3 to page 21, line 12.

Chung discloses a bidirectional, self-healing optical ring network with multiplexed subcarriers. In the event of an optical fiber breakage, light source failure, or photodetector

breakdown, the operability of the optical ring network can be restored. Unless a central base station and an optical network unit (ONU) have received an anticipated signal within a predetermined time period, a line breakage is assumed to have occurred. A fault recovery transmitter/receiver is then used to send an optical signal clockwise or counter-clockwise. However, it should be noted that failure to receive the anticipated signal is not necessarily the result of a broken cable and could, in fact, be the result of a system error or an equipment failure not involving a broken cable. In addition, Chung discloses that the central base station and the ONUs are only connected through a single optical fiber (refer to Chung's Summary of the Invention for further details).

Chung fails to disclose Applicants' claimed structure comprising a CPU for detecting a fiber breakage status based on control program data stored in an internal memory of the CPU. Additionally, Chung neither discloses nor suggests Applicants' claimed structure in the form of an internal memory of a CPU that includes such control program data. More specifically, the claimed control program data disables the master channel while enabling the slave channel to determine, in response to an error event occurring, whether or not the error event is caused by a reflection and, in response to determining that the error event is caused by the reflection, activating a selected one of the master and slave transmitting/receiving units to utilize a redundant channel such that optical transmission occurs not through the master channel but through the slave channel.

Moreover, Chung fails to disclose or suggest structure in the form of a memory that stores a control program for disabling the master channel while enabling the slave channel to determine, in response to an error event occurring, whether or not the error event is caused by a reflection. Furthermore, Chung fails to disclose or suggest a memory that stores a control program for disabling the master channel while enabling the slave channel to determine, in response to an error event occurring, whether or not the error event is caused by a reflection

and, in response to determining that the error event is caused by the reflection, activating a selected one of the master and slave transmitting/receiving units to utilize a redundant channel such that optical transmission occurs not through the master channel but through the slave channel. Thus, Applicants' claimed switching media converter is completely distinguishable from the systems disclosed in Chung.

Applicants' claimed invention differs dramatically from Chung's approach of assuming that a line breakage has occurred if a signal has not been received within a predetermined time window. Chung fails to perform a check to ascertain whether or not an error event is caused by a reflection. As indicated previously, failure to receive the anticipated signal is not necessarily the result of a broken cable and could, in fact, be the result of a system error or an equipment failure not involving a broken cable. Moreover, Chung discloses that the central base station and the ONUs are only connected through a single optical fiber. Accordingly, Chung fails to disclose Applicants' claimed utilization of a redundant channel in response to detection of reflection such that optical transmission occurs not through the master channel but through the slave channel.

An illustrative example will serve to distinguish Applicants' claimed invention from the approach disclosed in Chung. Assume that an optical fiber is broken such that it has a vertical surface at its broken end. Reflection occurs at this vertical surface so that an optical signal transmitted from a transmitter through the optical fiber will be returned to the transmitter. Adopting the approach disclosed in Chung, breakage of the optical fiber is not recognized by detecting a reflection from the fiber, but instead is inferred based upon not receiving an expected signal. Any of various problems could cause lack of receipt of the expected signal, including problems that do not involve reflections attributable to a broken optical fiber. In response to not receiving this expected signal, Chung uses a fault recovery transmitter to send an optical signal either clockwise or counter-clockwise. On the other

hand, using Applicants' claimed switching media converter, it is possible to check that the error is caused by reflection and, in response thereto, transmit the signal over an extra or redundant path. Chung fails to disclose or suggest Applicants' claimed redundant path.

Van Deventer fails to remedy the deficiencies of Chung. Van Deventer discloses a ring-shaped optical distribution network in which a single, self-healing fiber connection is used (refer, for example, to col. 2, lines 19-29 of Van Deventer). Applicants' claimed switching media converter is completely distinguishable from the systems disclosed in Van Deventer. With reference to claim 1, one feature of Applicants' invention is that, if an error event occurs, a redundancy media converter (MC) performs a check to see whether or not the error event is caused by a reflection. When the error event is caused by a reflection, a selected one of the master and slave transmitting/receiving units is activated to utilize a redundant channel such that optical transmission occurs not through the master channel but through the slave channel.

Applicants' claimed invention differs dramatically from Van Deventer's approach which utilizes a single optical fiber line denoted in FIG. 1 as reference numeral 1, wherein a power splitter 2 directs signals in a clockwise direction along the single optical fiber line 1, or in a counterclockwise direction along the same single optical fiber line 1. Accordingly, Van Deventer fails to disclose transmitting signals through two **different** optical communication lines as set forth in Applicants' independent claim 1.

An additional distinction between Van Deventer and Applicants' claimed invention is that Van Deventer fails to perform a check to ascertain whether or not an error event is caused by a reflection. A still further distinction is that Van Deventer fails to disclose Applicants' claimed utilization of a redundant channel in response to detection of reflection such that optical transmission occurs not through the master channel but through the slave channel.

In view of the foregoing considerations, it is submitted that claim 1 is patentable over Chung in view of Van Deventer. It is further submitted that claim 1 is allowable over the cited prior art. Dependent claims inherit all of the limitations of the respective parent claim. Since claims 2-5 and 9 depend from claim 1, claims 2-5 and 9 are allowable for the reasons discussed above in connection with claim 1.

Applicants submit that Chung and Van Deventer fail to teach or suggest each and every element of the claimed invention and are therefore wholly inadequate in their teaching of the claimed invention as a whole, fail to motivate one skilled in the art to do what the patent Applicant has done, fail to recognize a problem recognized and solved only by the present invention, fail to offer any reasonable expectation of success in combining Chung and Van Deventer to perform as the claimed invention performs, fail to teach a modification to prior art that does not render the prior art being modified unsatisfactory for its intended purpose, and disclose a substantially different invention from the claimed invention, and therefore cannot properly be used to establish a prima facie case of obviousness. Accordingly, Applicants respectfully request reconsideration and withdrawal of this rejection under 35 U.S.C. §103(a), which Applicants consider to be traversed.

Rejections Under 35 U.S.C. §103(a) - Claims 7 and 10

Claims 7 and 10 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Chung et al. (DE 100 50 936 A1) in view of Kowalczyk et al. (U.S. Patent US 5,587,957). Applicants traverse this rejection for the following reasons. Dependent claims inherit all of the limitations of the respective parent claim. Since claims 7 and 10 depend from claim 6, claims 7 and 10 are allowable for the reasons discussed above in connection with claim 6. Additionally, Chung was discussed above in connection with claim 6. Kowalczyk fails to disclose performing a check to ascertain whether or not an error event is caused by a reflection. Kowalczyk also fails to disclose Applicants' claimed utilization of a redundant

channel in response to detection of reflection such that optical transmission occurs not through the master channel but through the slave channel. Accordingly, Applicants respectfully request reconsideration and withdrawal of this rejection under 35 U.S.C. §103(a), which Applicants consider to be traversed.

Rejections Under 35 U.S.C. §103(a) – Claim 2

Claim 2 is rejected under 35 U.S.C. §103(a) as being unpatentable over Chung et al. (DE 100 50 936 A1) in view of Van Deventer (US Patent US 5,886,801) and further in view of Oberg et al. (U.S. Patent Application Publication US 2005/0084262 A1) (Oberg 1). Applicants traverse this rejection for the following reasons. Dependent claims inherit all of the limitations of the respective parent claim. Since claim 2 depends from claim 1, claim 2 is allowable for the reasons discussed above in connection with claim 1. In addition, Chung and Van Deventer were discussed above in connection with claim 1. Oberg 1 fails to disclose performing a check to ascertain whether or not an error event is caused by a reflection. Oberg 1 also fails to disclose Applicants' claimed utilization of a redundant channel in response to detection of reflection such that optical transmission occurs not through the master channel but through the slave channel. Accordingly, Applicants respectfully request reconsideration and withdrawal of this rejection under 35 U.S.C. §103(a), which Applicants consider to be traversed.

Rejections Under 35 U.S.C. §103(a) - Claims 3-5

Claims 3-5 are rejected under 35 U.S.C. §103(a) as being unpatentable over Chung et al. (DE 100 50 936 A1) in view of Van Deventer (US Patent US 5,886,801) and further in view of Oberg et al. (U.S. Patent Application Publication US 2003/0128984 A1) (Oberg 2). Applicants traverse this rejection for the following reasons. Dependent claims inherit all of the limitations of the respective parent claim. Since claims 3-5 depend from claim 1, claims 3-5 are allowable for the reasons discussed above in connection with claim 1. Moreover,

Chung and Van Deventer were discussed above in connection with claim 1. Oberg 1 fails to disclose performing a check to ascertain whether or not an error event is caused by a reflection. Oberg 1 also fails to disclose Applicants' claimed utilization of a redundant channel in response to detection of reflection such that optical transmission occurs not through the master channel but through the slave channel. Accordingly, Applicants respectfully request reconsideration and withdrawal of this rejection under 35 U.S.C. §103(a), which Applicants consider to be traversed.

Rejections Under 35 U.S.C. §103(a) – Claim 9

Claim 9 is rejected under 35 U.S.C. §103(a) as being unpatentable over Chung et al. (DE 100 50 936 A1) in view of Van Deventer (US Patent US 5,886,801) and of Oberg et al. (U.S. Patent Application Publication US 2005/0084262 A1) (Oberg 1), and further in view of Oberg et al. (US. Patent Application US 2003/0128984 A1) (Oberg 2). Applicants traverse this rejection for the following reasons. Dependent claims inherit all of the limitations of the respective base claim and any intervening claims. Since claim 9 depends from base claim 1, claim 9 is allowable for the reasons discussed above in connection with claim 1. In addition, Chung and Van Deventer were discussed above in connection with claim 1. Oberg 1 and Oberg 2 fail to disclose performing a check to ascertain whether or not an error event is caused by a reflection. Oberg 1 and Oberg 2 also fail to disclose Applicants' claimed utilization of a redundant channel in response to detection of reflection such that optical transmission occurs not through the master channel but through the slave channel. Accordingly, Applicants respectfully request reconsideration and withdrawal of this rejection under 35 U.S.C. §103(a), which Applicants consider to be traversed.

Conclusion

In light of the forgoing, Applicants respectfully submit that the Examiner's rejections under 35 U.S.C. §102(b) and 35 U.S.C. §103(a) have been traversed, and respectfully request that the Examiner reconsider and withdraw these rejections. If a communication with Applicants' Attorneys would assist in advancing this case to allowance, the Examiner is cordially invited to contact the undersigned so that any such issues may be promptly resolved. The Commissioner is hereby authorized to charge any additional fees that may be required for this amendment, or credit any overpayment, to Deposit Account No. 06-1130.

Respectfully Submitted,

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